

WHAT IS CLAIMED IS:

1 1. A clutch-actuating device for a clutch in a motor
2 vehicle power train, wherein the power train includes an
3 engine, a clutch, a transmission, and a control unit; said
4 clutch actuating device comprising an actuator motor driving
5 an actuating member, and further comprising a transfer
6 mechanism operable to transmit a movement of the actuating
7 member to a clutch release element that is movable against an
8 opposing force of a clutch spring to displace the clutch from
9 a closed position to an open position, wherein the transfer
10 mechanism has a first movement range in which said movement of
11 the actuating member in an opening direction of the clutch
12 does not displace the clutch from its closed position, and a
13 second movement range in which the movement of the actuating
14 member causes a displacement of the clutch, wherein the
15 transfer mechanism has an interval of loose play, and wherein
16 said loose play is used up within the first range.

1 2. The clutch-actuating device of claim 1, further
2 comprising a compensation spring mechanism which introduces a
3 first force/displacement characteristic into the movement of
4 the actuating member within the first range, wherein the

5 displacement of the clutch in the second range follows a
6 clutch displacement characteristic, and wherein in said second
7 range said clutch characteristic is superimposed on said first
8 force/displacement characteristic.

1 3. A method of determining the closed position of the
2 clutch that is equipped with the clutch-actuating device of
3 claim 1, comprising the steps of:
4 - moving the actuating member through a transition from the
5 first to the second range while simultaneously monitoring a
6 parameter that exhibits a predetermined characteristic
7 change during said transition,
8 - detecting said predetermined characteristic change and
9 equating a position where said characteristic change
10 occurred to the closed position of the clutch.

1 4. The method of claim 3, wherein the step of moving
2 the actuating member comprises an underlying monotonic
3 movement with a superimposed oscillatory movement, and wherein
4 said oscillatory movement has a small amplitude in comparison
5 to a total displacement range of the actuating member.

1 5. The method of claim 3, wherein the transfer

2 mechanism contains a hydraulic circuit with a snifting bore,
3 and wherein the method is performed in conjunction with a
4 snifting cycle.

1 6. The method of claim 5, wherein the parameter being
2 monitored comprises a hydraulic pressure downstream of the
3 snifting bore.

1 7. The method of claim 3, wherein the parameter being
2 monitored comprises at least one operating parameter of the
3 actuator motor.

1 8. The method of claim 3, wherein the clutch has a
2 gripping point, and wherein said determination of the closed
3 position is performed immediately after initializing the
4 control unit, prior to starting the engine, and prior to a
5 first opening of the clutch that is followed by a closing of
6 the clutch as far as the gripping point.

1 9. The method of claim 5, wherein said determination
2 of the closed position is performed while the engine is
3 running and a vehicle brake is applied, and wherein - if the
4 transmission is not already in a neutral position - the

5 transmission is set into the neutral position for a short time
6 interval by a transmission actuator.

1 10. A method of determining an actuating force of the
2 clutch that is equipped with the clutch-actuating device of
3 claim 1, wherein said first range and said second range have
4 different force-displacement characteristics, the method
5 comprising the steps of:

- 6 - moving the actuating member through at least part of the
- 7 first range;
- 8 - determining a first value of an operating parameter of the
- 9 actuator motor, said first value being representative of a
- 10 known force generated by the actuator motor to move the
- 11 actuating member within the first range;
- 12 - moving the actuating member through at least part of the
- 13 second range;
- 14 - determining a second value of said operating parameter of
- 15 the actuator motor, said second value being representative
- 16 of a force generated by the actuator motor to move the
- 17 actuating member within the second range; and
- 18 - determining the actuating force based on said known force
- 19 and on said first and second values of the operating
- 20 parameter.

11. A method of determining a temperature of the actuator motor in the clutch-actuating device of claim 1, wherein said actuator motor is an electric motor and wherein said first range and said second range have different force-displacement characteristics, the method comprising the steps of:

- moving the actuating member through at least part of the first range;
- determining at least one temperature-dependent operating parameter value of the actuator motor, said temperature-dependent operating parameter value being dependent on said temperature of the actuator motor;
- comparing the at least one temperature-dependent operating parameter value to a stored table of parameter values as a function of temperature values, and
- determining the temperature of the actuator motor from said stored table by finding a match between the at least one temperature-dependent operating parameter value and one of the parameter values in said stored table.